Remarks/Arguments:

Claims 1-8, 16-19 and 30 are pending in the present application, for which this amendment cancels previously withdrawn and restricted claims 9-15, 20-29, and 31-62. In the Office Action dated April 6, 2006, the Examiner has objected to a formality in claim 1 (lack of a concluding period), and has asserted the following rejections:

Bismuth anticipates claims 1-2, 4, 16 and 18;

The combination of Bismuth with Brinkman makes obvious claims 3, 5, 7, 17, 19 and 30; and

Levner (2003/0007733) anticipates claims 1-8, 16-19 and 30.

Claim 1 is amended to add a concluding period.

- Respecting the rejections over Bismuth:

Bismuth describes a wavelength division multiplexing WDM device in which large channel fanout is desired (page 513, first paragraph). Multiple supergratings are inscribed into/onto a same window area of ***a*** planar waveguide (page 513, second paragraph, emphasis added). Neither the coupling among gratings, nor the spacing between wavelength channels, is seen to relate to coupling radiation between two different waveguides (see second paragraph). The Bismuth device is explicitly described as a 1x4 WDM device (page 514, first paragraph). The rejection relies on Bismuth's Fig. 1, which is seen to illustrate such a 1x4 WDM device having a single input (left side of Fig. 1) that feeds into the illustrated superimposed gratings, for which the multiple outputs (right side of Fig. 1) are seen to be wavelength/frequency selective based on output angle (see page 513, second and third paragraph). Bismuth is seen to exploit inter-coupling among superimposed gratings to affect a fanout from a single input, where the fanout (maximum capacity 100) separates the 10 Angstrom-spaced wavelength channels by about 0.2 degrees (page 513, second paragraph).

In contradistinction, claim 1 recites at least two waveguides (Bismuth is seen to disclose only one in a single WDM device); a first one of said waveguides adapted for transporting input radiation from a first input port to output radiation exiting from a first output port

(Bismuth is seen to disclose a waveguide with one input port and a multiple channel output, where channels are separated by wavelength and output angle); and a second one of said waveguides transporting input radiation from a second input port to output radiation exiting from a second output port (again, Bismuth is seen to disclose a waveguide with one input port and a multiple-channel output where the channels are separated by wavelength and output angle); and a supergrating for coupling input radiation propagating from one of said first and second input ports along a corresponding waveguide to the other of said first and second waveguides (Bismuth is not seen to couple between waveguides). Bismuth is not seen as particularly relevant to waveguide coupling; its relevant disclosure appears limited to superimposed gratings, but Bismuth selects the gratings to superimpose so as to result in the wavelength selective fanout. Claim 1 is seen to patentably distinguish over Bismuth, as are dependent claims 2-8.

Claim 16 recites a set of waveguides, and is herein amended to recite that each waveguide has at least one input port and at least one output port. This distinguishes over Bismuth as detailed above with respect to claim 1. Further, claim 16 recites at least one wavelength dependent supergrating coupler that couples a selected wavelength band in or out of the input waveguide. Bismuth is seen to divide an input beam by wavelength, not to couple wavelength bands. Claim 16 further recites that the remaining optical beam in the input waveguide has a wavelength range that has been added to or subtracted from by the selected wavelength band. Bismuth is a single waveguide, so regardless of any angular separation of wavelength dependent channels after passing the superimposed gratings, the singular waveguide of Bismuth can exhibit no wavelength bands added to or subtracted from what is input. This is because there is no coupling or decoupling among waveguides, the superimposed gratings of Bismuth manipulate the wavelength spectrum, but cannot add to or subtract from that spectrum. Both the left and right side of the Bismuth 1x4 WDM device exhibit the same wavelength spread in a single waveguide, the difference being that at the right side of Fig. 1 the wavelength channels are fanned out by an output angle relative to one another. Bismuth may use the superimposed gratings to split wavelength channels, but does not use them to alter a wavelength range within a waveguide. While one might direct the different fanned out wavelength channels of Bismuth to different waveguides, such an adaptation would fail to render obvious claim 16 because the Bismuth superimposed gratings

would still not "couple a selected wavelength band into or out of the input waveguide" as in claim 16.

- Respecting the rejections over the combination of Bismuth with Brinkman:

It is not seen how ordinary skill, with or without the teachings of Brinkman, can modify Bismuth so that the Brinkman superimposed grating reverses direction between input and output radiation, as claimed more particularly at claim 3. Bismuth explicitly recites a maximum fanout range of 100 with angular separation of channels at about 0.2 degrees. This is seen to yield a fanout of +/- 10 degrees from center, which is not seen to be a direction "substantially opposite" as in claim 3.

It is not seen how one might modify Bismuth, with or without the teachings of Brinkman, so as to controllably alter the Bismuth modal index of refraction as recited in claim 5, because Bismuth's superimposed gratings are etched and thereby fixed (see page 513, second and third paragraphs). Once Bismuth's gratings are etched, it appears that they cannot be controlled so as to produce different outputs from identical inputs. The same distinction is seen to apply regarding claim 7.

Brinkman is not seen to cure the above defects noted in Bismuth vis a vis the anticipation rejection, so claims 1-5, 7, 16-19 and 30 are seen as patentable over Bismuth alone or in combination with Brinkman. Claims 6 and 8 are not rejected under either of Bismuth or Brinkman.

- Respecting the rejections over Levner 2003/0007733:

The specification is amended herein to claim benefit (as a continuation-in-part) to ser. no. 10.188,530, which is the application for which Levner 2003/0007733 is the publication. To effect this benefit claim, a Petition has been submitted this day with the requisite showing and fee. To the extent that the petition is granted, Levner 2003/0007733 is not prior art against this application. A copy of 10/188,530 as filed is attached as an appendix hereto, as is a copy of the submitted Petition. Should the petition not be granted, the lack of arguments presented herein as to the independent or any dependent claims is not to be construed as acquiescing in the Examiner's characterization of Lever 2003/0007733.

The Applicant requests the Examiner consider the above arguments and claim amendments, withdraw the rejections, and pass the pending claims to issue. The undersigned welcomes the opportunity to resolve any remaining matters, formal or otherwise, via teleconference at the Examiner's initiative.

Respectfully submitted:

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August 4, 2006
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